

28.(amended) A method of improving the agronomic properties of a plant comprising:  
maintaining plant vigor and hardiness under stressful conditions  
by providing [a] the plant [having] with increased cellular levels of a  
nonsymbiotic plant hemoglobin; and  
growing the plant under stressful conditions, thereby allowing  
the plant to develop more vigorously under adverse conditions.

29. The method according to claim 28 wherein the nonsymbiotic plant hemoglobin is barley nonsymbiotic hemoglobin.

30. The method according to claim 28 wherein the improved agronomic properties include germination.

31. The method according to claim 28 wherein the improved agronomic properties include seedling vigour.

32. The method according to claim 28 wherein the improved agronomic properties include reduced cellular levels of fermentation products.

33. The method according to claim 28 wherein the improved agronomic properties include increased oxygen uptake.

34. The method according to claim 28 wherein the improved agronomic properties include increased tolerance to hypoxic conditions.

35. A method of selecting seeds for breeding to produce seed lines having desirable characteristics comprising:

providing a representative seed of a given seed line;  
growing the seed such that the seed germinates;  
isolating an extract from the seed;  
measuring levels of nonsymbiotic plant hemoglobin expression within the extract; and  
selecting or rejecting the seed for further breeding based on the hemoglobin levels.

36. The method according to claim 35 wherein the

SUB  
E1

D2

SUB  
E2